D101.71:32

Arrowhead

COMBAT DEVELOPMENTS COMMAND

AUSA Issue

October 1971

UNIV. OF FLORIDA LIBS.
DOCUMENTS
DEPARTMENT
U.S. DEPOSITORY

UNIVERSITY OF FLORIDA LIBRARIES
OCT 1971
DOCUMENTS DEPT.

Monday—11 October 1971

Laird

1000-1130 Opening Ceremonies
Edward C. Logelin, President, AUSA
Keynote Address by: The Honorable
Melvin R. Laird
Secretary of Defense

1400-1600 Presentations:
MVA Results to Date—A Panel

1830-2015 President's Reception honoring the Secretary of the Army and Chief of Staff

Tuesday—12 October 1971

Westmoreland

0930-1100 Presentations:
Panel on Contemporary Concerns

1230-1430 AUSA Annual Luncheon (Stag)
Speaker: General William C. Westmoreland
Speaker: Chief of Staff, U.S. Army

Wednesday—13 October 1971

McCain

0930-1130 Presentations:

1. The Military and the Media—A Panel
2. Report on ASIA:
   ADM John F. McCain, Jr., CINCPAC

1400 AUSA Annual Business Meeting

1800-1945 Marshall Memorial Dinner Reception

2000 Marshall Memorial Dinner
Speaker: Hon. Robert F. Froelhke
Secretary of the Army
Marshall Medal Receipient:
The Honorable Dean Rusk

Froelhke

Rusk

ARROWHEAD
COMBAT DEVELOPMENTS COMMAND

October 1971 No. 32

ARTICLES

2 AUSA: When The Army Needs a Friend
5 The Army Tunes In To A Changing Generation
8 Infantry's New Anti-Tank Punch
14 Armor Faces The Future
19 Science At CDC: From Abstract To Concrete
27 Freedom . . . Privilege Or Obligation

REGULAR FEATURES

Inside Front Cover AUSA Agenda
26 For God And Country
29 Spot Reports

PICTURE CREDITS: Pages 10-15, McQuiston; Page 21, McQuiston; Page 27, McQuiston; Page 23, Witcraft. All other photos, US Army Photo. Cover by Lt. David Arnold.

The ARROWHEAD is an authorized publication of the US Army Combat Developments Command, Ft. Belvoir, Virginia 22060, under the provisions of AR 360-81. Published monthly by means of photo offset reproduction, circulation is 3600 copies. The views expressed herein are not necessarily those of the Department of the Army. Material can be submitted to the Information Officer. Phone; Autovon 354-3982 or commercial area code 703-664-1455. Drafts are accepted with pictures or sketches whenever available.

2

5

8

14

19

27

For 21 Years
It's Always Been
There To Help . . .

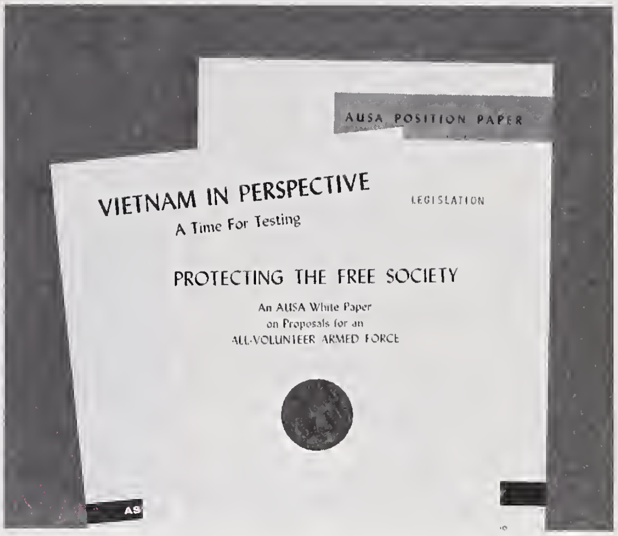
This year the Association of the United States (AUSA) celebrates 21 years of staunch support to the U. S. Army and some 112 worldwide chapters have rededicated themselves to a continuing program of supporting improvements within the Army.

The focal point of that rededication comes during the annual meeting, being held again this year, Oct. 11-13, at the Sheraton-Park Hotel in Washington, D.C. As in past years, the three-day conclave will include educational displays by the Army (including CDC) and industrial organizations, business meetings, conferences and social affairs.

However, even during the latter events, there always is serious discussion of business affect-

AUSA: When The Army Needs A Friend

Brigadier General (USAR) Robert F. Cocklin, Director of Public Affairs for AUSA, (Left) briefs CDC Commanders on the program of the Association. Among the 1972 goals for AUSA is an increased effort to tell the Army's story to grass roots audiences. At right are depicted some of the policy papers developed by AUSA in support of Army or Department of Defense objectives.



AUSA POSITION PAPER

VIETNAM IN PERSPECTIVE

A Time For Testing

LEGISLATION

PROTECTING THE FREE SOCIETY

An AUSA White Paper
on Proposals for an
ALL-VOLUNTEER ARMED FORCE

AS

ing the future of the Army and its members. Unlike many organizations of its type, AUSA has never lapsed into a mere social club.

From the date of its founding in 1950 as a nonprofit, volunteer organization, its history is replete with examples of services performed on behalf of the Army and its members.

The ink hardly was dry on the charter when AUSA plunged into the programs which were designed to aid both the individual within the Army and the Army as an organization within the national defense structure.

Late in the 1950's, AUSA led the fight to change the American National Security policy and posture from an over-reliance on the massive retaliation concept to one of flexible response. During the same period, the organization recognized and fully supported the One Army concept which brought a more unified relationship between the active Army, the National Guard and the Army Reserves.

With the introduction of missiles into foreign arsenals, AUSA supported development and deployment of anti-ballistic missile (ABM) systems to strengthen national defenses. Moreover, the Association maintains as a continuing goal the conduct of educational programs to improve public understanding of the need for the system.

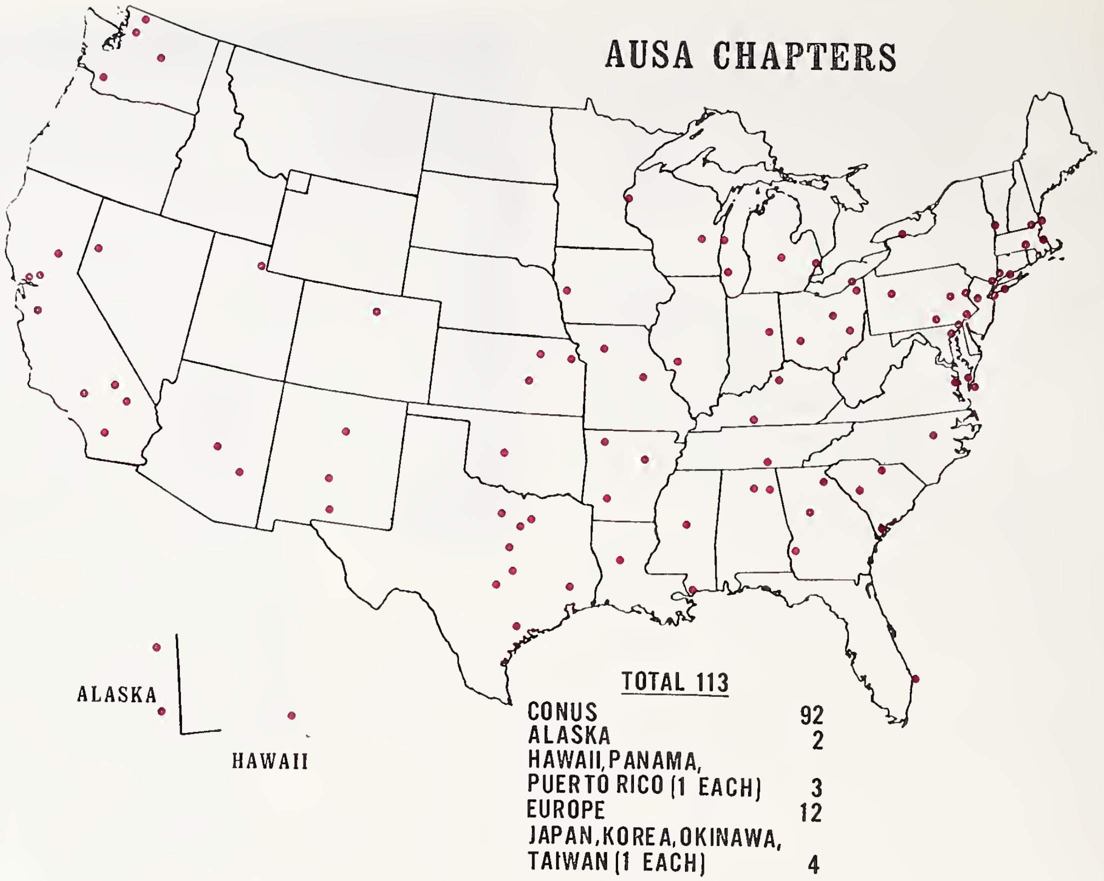
These were all, of course, "big picture" goals and achievements. What of the individual soldier and his personal needs? AUSA, which at the outset dedicated itself to being an association for the professional soldier, aggressively pushed for legislation that benefited the individual.

For years, military pay measures failed to get needed support in Congress and this failure had become a festering thorn in the sides of the career soldiers and draftees alike. Dedication to the military was one thing; bread on the table was something else. So AUSA established as one of its priority goals the support of continuing pay increases with the overall objective of raising military pay to a level comparable with that of other government employees.

In the area of compensation, the Association strongly supported pay proposals which included the recomputation of retired pay in its relationship with current active duty pay. Another continuing concern of AUSA is the Dual Compensation Act which, in the eyes of many, places discriminatory restrictions on federal employment of certain retired military members.

AUSA has supported improved medical and dental care in the Army, especially for retired personnel, a matter of particular concern given the continuing increasing retired rolls. A recent resolution also called upon the Department of Defense to provide adequate medical and dental care for dependents of both active duty and retired personnel.

More recent actions by AUSA with direct impact on nearly everyone in the Army was the Association's intervention with the Internal Revenue Service and with the Civil Aeronautics Board (CAB). In the former case, AUSA worked with Department of Defense Officials to clarify measures necessary to iron out tax regulations so that Army personnel would not be unfairly taxed on reimbursement for PCS moves.



AUSA CHAPTERS

TOTAL 113	
CONUS	92
ALASKA	2
HAWAII, PANAMA, PUERTO RICO (1 EACH)	3
EUROPE	12
JAPAN, KOREA, OKINAWA, TAIWAN (1 EACH)	4

"AUSA established as one of its priority goals the support of pay increases"

In the latter case, the Association intervened successfully with the CAB to overturn a tariff action that had the effect of giving military standby passengers lower priority than student standbys.

Membership in the Association is purely voluntary and, surprisingly enough, many of AUSA's most influential members have no direct association with the Army. These are the editors, business men, and professional men who provide the backbone for many of the Association's chapters.

Programs developed by the various chapters are the key to the Association's accomplishments. Moreover, local level liaison with governmental agencies, as well as with other military-oriented organizations such as the American Legion, the Veterans of Foreign Wars, Reserve Officers Association, National Guard Association and similar others, has paid handsome dividends in the molding of public opinion favorable to the Army and the National Defense.

For members of AUSA, a recently-added side benefit is the eligibility to participate in an unusually low-cost group life-insurance program developed especially for the Association. And, of course, any mention of member's benefits would not be complete without mention of Army Magazine, which is published monthly and which long has been recognized as the premier professional publication in its field.

It's been a long and fruitful association, this link between the Army, its soldiers and the Association of the United States Army. Much has been accomplished, yet few officials will dispute the prediction that never will the Army need its professional association more than during the turbulent times immediately ahead.

THE ARMY TUNES IN TO A CHANGING GENERATION

by Sp5 Bill Witcraft

A one-year enlistment? CDC's "People Agency" holds a three-day workshop to talk about possible alternatives for today's diverse Army.

☐ People are changing. What was good enough for father often isn't good enough for son.

Physically, man has not changed. The man is still a man—only his environment and attitudes have changed.

Today's soldier also has changed. The soldier of today is better educated, better informed, and, in most cases, more travelled than the soldier who fought for this country 20 or 30 years ago.

To help the Army recognize and meet these changes, the Combat Developments Command (CDC) Personnel and Administrative Services Agency (PASA), located at Ft. Benjamin Harrison, Ind., recently conducted a three-day workshop on the problems encountered in adapting young men entering today's Army to the role of effective combat soldiers.

Entitled the Personnel Offensive Workshop, it was designed to develop information on the effects of changes in personnel and social characteristics of incoming personnel upon the Army during the 1970s. The workshop also planned to propose appropriate policies to accomodate these changes and utilize these soldiers effectively.

According to PASA's Commanding Officer, Colonel Lester J. Evans, "We identified four major areas we thought were problem areas. After that was accomplished, we handpicked personnel based upon whom we knew were working in these areas and had expertise in these areas. These people ranged in grade from Specialist Four to Colonel and presented the widest possible range of views. In excess of 55 personnel attended and participated in the workshop."

The four areas of discussion were:

- Leadership
- Training
- Classification, Assignment, and Utilization
- Reward, Incentive, and Punishment

The personnel who participated in the workshop were divided into four committees based upon their knowledge in one of the above fields.

"We weren't really surprised at any of the recommendations that came out of the workshop, since we had already come up with a lot of these ideas," Col. Evans commented. "What we wanted to do was add a little depth to what we already had. We actually programmed certain questions to each one of the committees so that they could go into it in depth and support some of our findings.

"One of the highlights of the workshop was a recommendation for a one-year enlistment. If we can just get this one thing through, I think the whole study will have been worthwhile. This is how it works. Let's say, an individual enlists for one year. At the end of that one year, he can decide whether he wants to get out or the commander can decide whether he wants to keep him or not. The individual could be released with a minimum of administrative effort. At any time after that, say every 60 or 90 days, he can decide if he wants to get out or not. More or less like a contract that you would have with a civilian firm. This is good.

"Another thing," continued

Col. Evans, "was the utilization of WACs. By law, we are only authorized two-percent of our authorized force to be WAC personnel. It came out in the workshop that maybe we should utilize WACs more in our TOE units (other than combat units). There are many jobs that a WAC could do."

The Leadership Committee, headed by Lieutenant Colonel T. M. Vassey, assigned to Headquarters, JFK Center, a member of the Continental United States Army Command's Leadership Board, at Ft. Bragg, N.C., attempted to discover a leadership style which would be effective in the future in the face of the expected characteristics of the young soldier of the '70s in the Army.

They found that leadership behavior must be flexible in technique and personal in application if it is to motivate the individual while maintaining a high order of discipline. A professional attitude toward getting the job done and a sincere interest in each of his men are two absolute necessities on the part of the leader.

In order to arrive at recommendations for leaders of the future, the committee first had to identify problem areas that face the leaders of today. Fourteen problem areas were identified and discussed, the major problems being lack of integrity and over-commitment among the leaders of today.

It was found by the Leadership Committee that leadership could be improved by educating and training our officers and NCO leaders. However, the process must emphasize the educational aspect more than that of the training. The knowledge

of behavioral sciences should be capitalized upon by Army leaders.

"I think the biggest problem area in the Army right now stems from leadership," maintained Col. Evans. "We should have a graduate noncommissioned officer leadership school, all the way up to Command Sergeant Major. I think we owe it to the men that he will lead to give him the proper tools; in other words, teach him to be a good leader."

The conclusions of the Training Committee were that the combat factors, the characteristics of the young soldier of the 1970s, and the purpose of training cause a powerful trend that can degrade the Army's capability to perform its role in national defense.

The Training Committee agreed that the greatest obstacle to change was those people who have advanced to positions of leadership within the present syster. In other words, the people who must initiate the changes in policy, programs, and procedures are the people for whom the old policies, programs, and procedures served so well.

Said Col. Evans, "In some respects today we overtrain a soldier. One member of the training committee suggested that we validate the knowledge and skills possessed by the trainee upon entry into active duty to determine the need to provide basic combat training. This could be accomplished by determining his markmanship, physical condition, and military skills. The Army then could eliminate training in which the trainee has demonstrated proficiency and thus accelerate his progress through Basic Combat Training or its equivalent."

The Classification, Assignment, and Utilization Committee, headed by Lieutenant Colonel R. H. Jennings, Chief of the VOLAR Committee at Ft. Benjamin Harrison, proposed that the first place to start fitting "the right man with the right job" was in the recruiter's office.

They recommended that the recruiter's quota be used only as a guide since all too often a recruiter will enlist a man into the Army just to fill his quota and not the needs of the Army. They felt that quality and not quantity should be stressed.

Under the assumption that the Modern Volunteer Army Concept would be adopted by the Army, the Reward, Incentive, and Punishment Committee recommended, among other things, that military pay should be at the same level as civilians' regardless of position or profession.

But, they also recommended that the Army explore and test the feasibility of "negative payment": decreasing pay because of inadequate performance, work tardiness, or unexplained absences.

The thoughts and findings developed during the workshop will be integrated into the final recommendations of the Personnel Offensive, a major part of the DA priority study, The American Soldier in the 70s.

Although the Army is changing, Col. Evans doesn't believe that it is changing too fast. "Most of the changes brought about by the Modern Volunteer Army concept are things that commanders in the past thought of," he noted.

There were 58 attendees at the Personnel Offensive Workshop ranging in grade from Colonel to SP4 (opposite page, top). The opening remarks were made by BrigGen. Ross R. Condit, Jr., ommanding General, Personnel nd Logistics Systems Group pposite page, bottom). The ttendees were divided into four committees to discuss the major problems facing the young soldier today (above).

Infantry's New Anti-Tank Punch

by Sp5 Rick McQuiston ■ Holland Drop Zone is a patchwork quilt of wooded and barren areas, sewn together by red-brown roads and narrow paths. Now, the ground is warped by a recent rain and the sky is a blue sea dotted with clouds.

It's quiet. But it's a breaking quiet.

From the distance comes the throbbing whine of a pair of OH-58As whirring over the treetops. They set down in a veil of dust about 30 feet apart in a small clearing. Out of the lead OH-58A clamber three soldiers. Crouching low, they rush to the second helicopter. Met by a fourth soldier, they quickly unload a DRAGON anti-tank weapon and disappear into the bushes. The two OH-58As lift off, tails high, still flying the nap of the earth.

A LOHAR crew is silhouetted against a cloud-patched sky as they load a TOW into an awaiting LOH in one of the preliminary time trials before the actual tests. On the opposite page is one of the TOWs used in the testing.

About a thousand meters away, a column of Sheridan tanks rumbles noisily down a dirt road.

Suddenly, a cloud of smoke explodes from the bushes and the lead Sheridan stops, its path blocked by a billowing snake of red smoke. Another Sheridan in the column quickly veers off the road and heads through the trees at top speed toward the bushes near the clearing.

Another puff of smoke bangs from the bushes. The Sheridan stops. Yellow smoke streams by its right track.

The two OH-58As appear over the trees, flutter down, swallow the four soldiers emerging from the bushes, and lift off again.

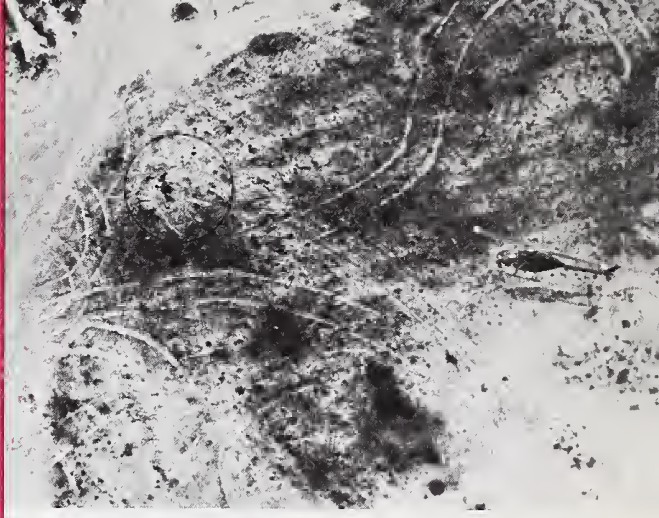
It's over in a matter minutes.

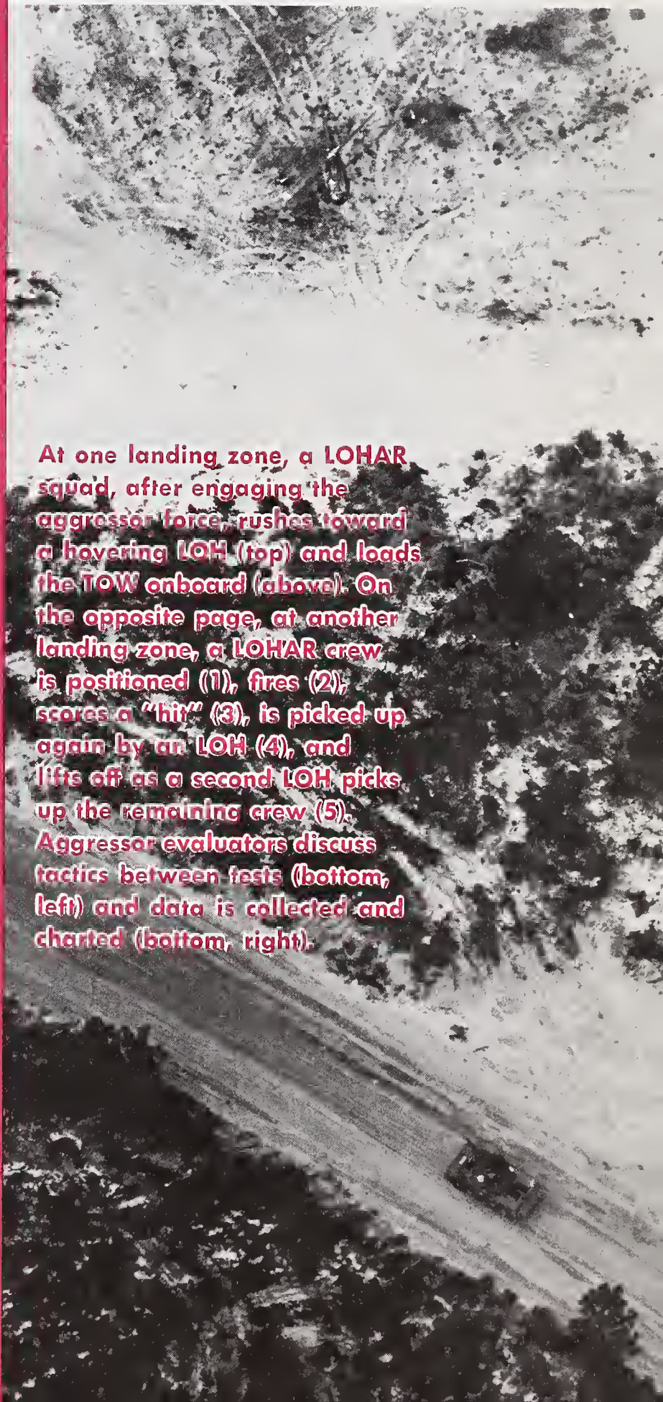
Result: two Sheridans are "knocked out" and the DRAGON squad escapes unscathed.

And this scene—with similar results—is repeated again and again along the same road. It is monitored and checked and evaluated by a team of researchers clustered in jeeps along the road, beside the Sheridans, and in the bushes. They have gathered here on the maneuver area west of Ft. Bragg, N.C., to see if a concept developed by the Combat Developments Command (CDC) Infantry Agency—Light Observation Helicopter in an Anti-armor Role (LOHAR)—will prove workable in a combat environment.

The LOHAR tests are being manned by airborne, infantry, artillery, and armor elements of the 82d Airborne Division at Ft. Bragg, and the testing and evaluation staff consists mainly of Division personnel. But assisting in the project is a melting pot of civilian and military personnel, including CDC's Infantry Agency, Aviation Agency, and Armor Agency, the Army Materiel Command, and the Bell Helicopter Company, designer and builder of the Light Observation Helicopters (LOHs) used in the tests.

"Basically, we're exploring one phase of the LOHAR concept," explains Lieutenant Colonel Albert Malone of the CDC Infantry Agency. "What we're looking at now is the ground application: the use of the helicopter to add a degree of mobility which ground-deployed weapons don't have with either their backpack or ground vehicular pack capabilities."





At one landing zone, a LOHAR squad, after engaging the aggressor force, rushes toward a hovering LOH (top) and loads the TOW onboard (above). On the opposite page, at another landing zone, a LOHAR crew is positioned (1), fires (2), scores a "hit" (3), is picked up again by an LOH (4), and lifts off as a second LOH picks up the remaining crew (5). Aggressor evaluators discuss tactics between tests (bottom, left) and data is collected and charted (bottom, right).

①

②

④

③

⑤

The LOHAR squads, employing both the DRAGON and TOW (Tube-launched, Optically-tracked, Wire-guided) anti-tank weapons systems, are envisioned as being located forward of an airborne infantry battalion in the defense. Theoretically operating forward of the combat outpost line, the squads are inserted onto landing zones via LOHs, engage an approaching "enemy" tank column with either the TOW or DRAGON, and are picked up again by the LOHs before the column comes into contact with the main battle positions.

"One of the advantages of this concept," says Captain Raymond Kauffman, one of the test evaluators, "is that we are able to go out and deploy at greater ranges and engage the enemy forces—and we haven't been able to do this before."

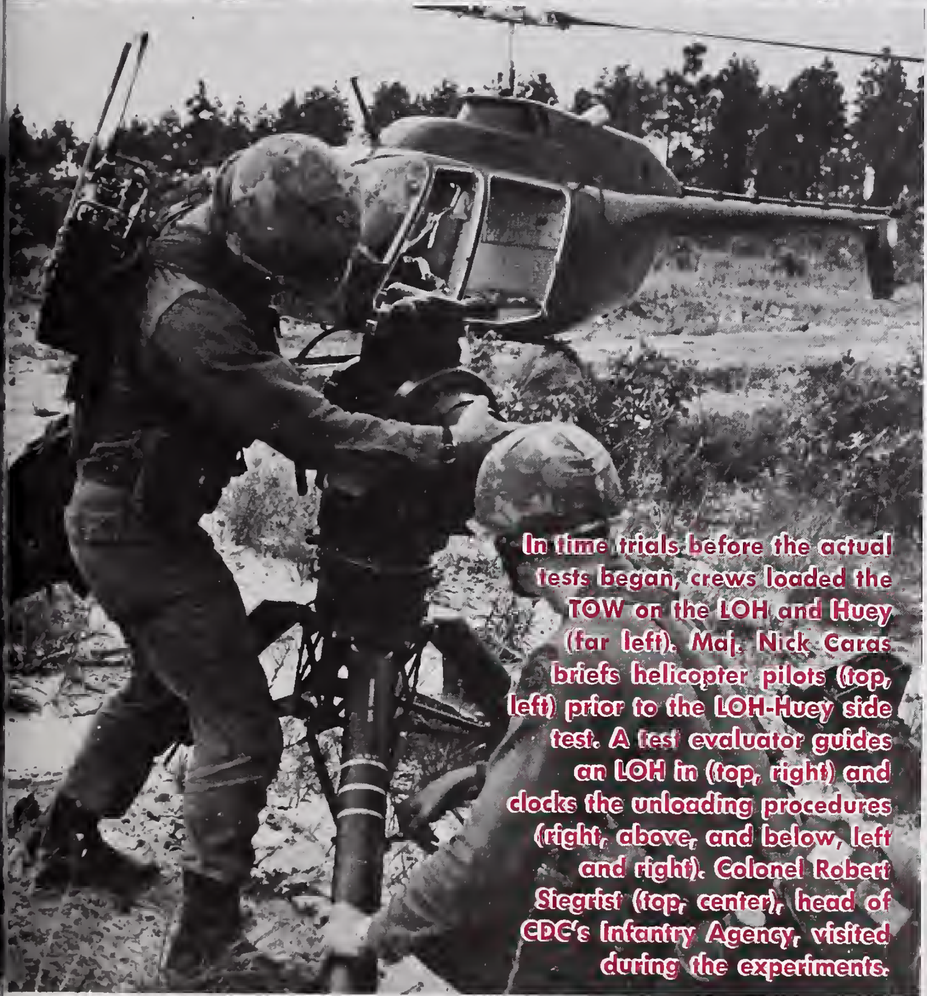
The concept, then, has application for all phases of infantry. "From the infantry standpoint," comments LtCol. Malone, "this is not only a vital but a principle matter of interest since, of course, anti-armor defense is a critical requirement for infantry in any tactical operation." Adds Major Nick Caras, chief of the test's analysis group: "Definitely, the airborne units are worried about armor operations."

Prior to the actual testing of the concept, a side test, requested by the Commanding General of the 82d Airborne Division, Major General Robert Blanchard, pitted the LOH against its larger and heavier sister ship, the UH-1G Huey. It was felt that the Huey might be better suited to the LOHAR concept, since the Huey is organic to the Division.

Two LOHs (the TOW employs two LOHs—one toting the TOW and one crew member and the other carrying the remaining three crew members) and a Huey inserted and extracted a TOW squad twice apiece at three separate landing zones. Four controllers at each landing zone checked each insertion and extraction for sound and sight detection, unloading and loading times, and insertion and extraction techniques.

"The Huey came out better as far as loading and unloading the TOW is concerned," admits Cpt. Kauffman. "But as far as the concept is concerned, the LOH is a much better helicopter. It can get in and out of tight landing zones

continued on page 26



In time trials before the actual tests began, crews loaded the TOW on the LOH and Huey (far left). Maj. Nick Caras briefs helicopter pilots (top, left) prior to the LOH-Huey side test. A test evaluator guides an LOH in (top, right) and clocks the unloading procedures (right, above, and below, left and right). Colonel Robert Siegrist (top, center), head of CDC's Infantry Agency, visited during the experiments.

Armor Faces The Future

"We Propose To Challenge You With Some New Initiatives In Armor—Initiatives To Meet The Current Threat."

The following article is an updated adaptation of a presentation given by the Armor Agency at the annual Armor Association meeting held at Ft. Knox, Ky.

Gentlemen, the Combat Developments Command Armor Agency is pleased to be afforded this opportunity to make a presentation to you. We are going to forego the usual method of presentation. You will not see any organization charts, wiring diagrams, or capability statements. Instead, we propose to challenge you with some new initiatives in Armor—initiatives to meet the current threat, a threat which retains its magnitude and preponderance of mechanized strength; a threat committed to mobile combined arms warfare with emphasis on the continued offensive.

The Soviet Army together with its Warsaw Pact allies represent the largest mechanized ground force in the world today. The Warsaw Pact allies are capable of employing heavily armored forces against the NATO allies in Europe on fronts extending from Denmark in the north to Italy in the south.

Soviet doctrine stresses that the offense will be conducted from the march by fast-moving tank and mechanized forces. Rapid, hardhitting, round-the-clock attacks are coordinated with conventional rockets, air and artillery fire. Small airmobile and airborne forces may be employed in rear areas. Their integrated weapons systems include medium and light artillery, medium tanks, air defense weapons, rockets, mortars, and small arms.

We must be prepared to meet this strength within the constraints of manpower ceilings, decreasing budgets, and increasing costs. To achieve this we must use every technique available to increase our combat effectiveness. One hears continually that we aim to offset their quantitative advantage by maintaining a qualitative advantage, both in professional soldiers and effective weapons. This is easily said, but four salient conditions must be met if we are to make this qualitative advantage work.

- We must have the requisite mobility about the battle area to apply our qualitative advantage at the decisive point.
- We must have rapid, accurate intelligence to determine where the decisive point is.
- We must have rapid means of decision making and control to enable us to be there at the decisive time.
- We must be able to employ our weapons systems both day and night, in rain and fog, dust and smoke, whatever the conditions.

Considering the last point first, we must be able to fight at any time. Night and adverse weather have long hampered combat operations, giving an advantage to the attacker. For

example, would the Battle of the Bulge have taken the same character if our reconnaissance had been able to penetrate the adverse weather to detect the German buildup? Would the Nazis have infiltrated past our positions if our ground soldiers had been able to observe their movements in the driving snow and black of night?

Probably you are all familiar with starlight scopes which amplify ambient moonlight or starlight several thousand times. These devices are a major step over white and near infrared searchlights. However, they are adversely affected by atmospheric conditions, and smoke and dust on the battlefield.

A major initiative lies in the area of thermal imagers—devices which "see" a target because of its differences in temperature from its background. Although the details of these devices, applicable to ground and aerial use, are classified, we can outline their employment and characteristics in broad terms.

One thermal imager is FLIR (Forward Looking Infrared Target Acquisition and Fire Control System). It is called forward looking because when mounted on the nose of a helicopter, it looks in the direction of flight.

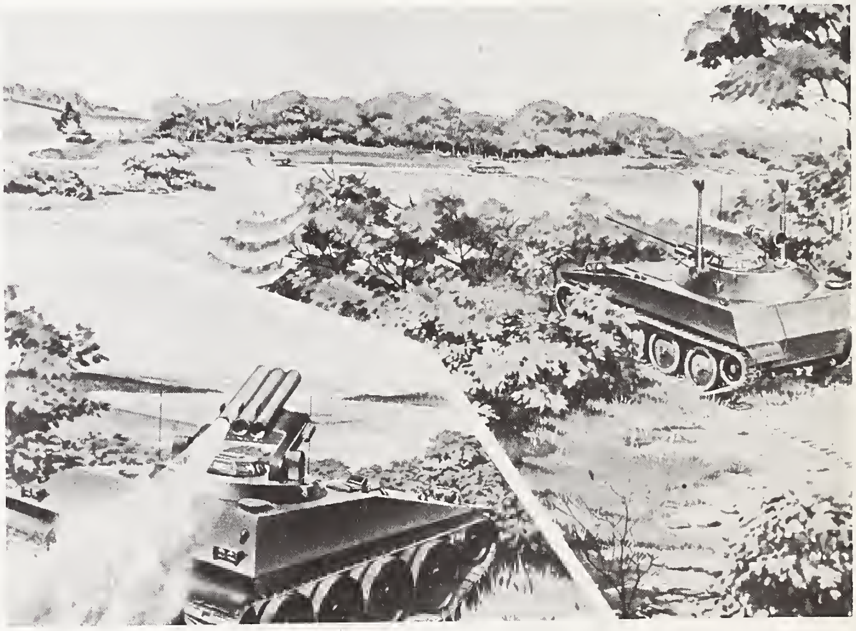
Imagine yourself flying in the dark of night—by turning on FLIR you could see as if it were day. Roads, houses, trees—everything to the naked eye would be plainly visible. The operator can reverse the color from white on black to black on white to best reveal the contrast.

Another far infrared detection system is called PINE, or Passive Infrared Night Equipment. Another device, called FIRTI, or Far Infrared Target Indicator, has been tested on some tanks. An experimental "breadboard" model mounted externally has been used in initial tests. Follow-on models will be installed inside the turrent. In some cases they also enhance target acquisition by day as they will easily penetrate camouflage. Any hot object stands out vividly.

Tests have also shown that thermal imagers markedly increase second round hit probabilities with tank guns (both in the day and night) as they are little hampered by obscuration or dust, and tracer rounds show up very well on the imager. They also have a capability to detect buried mines when employed from either ground or aerial vehicles.

Such an all-weather vision capability for the crews of ground and aerial vehicles is a major priority, and thermal imaging devices seem to offer many advantages. Our goal, for night vision is to ensure that we put the best device for our purposes on our combat vehicles, and to develop doctrine to capitalize on the capabilities these devices promise to provide. Thermal imagers are a part of the ever-increasing field of

Below is the MYSTIC weapons system, which employs the "fire and forget" missile. This system offers Armor the potential of placing mobile and less vulnerable fighting vehicles in contact with the enemy force while the complex and more expensive weapons system remains in a protected position. In theory, the fighting vehicle illuminates the target with a laser beam (right), then, when the missile is launched from a protected position (left) in the general direction of the target, it locks onto the illuminating signal and homes in on its target.



STANO. (Surveillance, Target Acquisition and Night Observation) devices. These devices are rapidly increasing the effectiveness and the complexity of mobile warfare. A second major type of STANO device is the sensor—an instrument which greatly extends our capabilities of surveillance, long a mission of cavalry units.

How many of you have ever felt the frustration of knowing that the area or zone assigned was too large to survey adequately? How many times have you wished for 50 additional pairs of eyes to cover avenues of approach—eyes that never sleep? Sensors, particularly UGS, or Unattended Ground Sensors are not an all-encompassing solution. There is no substitute for an alert, well-trained observer; but they do offer a dramatic means to increase the density, intensity, and range of surveillance operations. Unattended ground sensors detect potential targets by transmitting radio frequency signals whenever disturbances of a seismic, acoustic, magnetic or physical nature occur in their vicinity. When used in an alerting role in conjunction with radar or passive night vision devices, they are a potent means of increasing our knowledge of enemy movement, which is so important in our ability to react in a timely manner.

Though developed for Southeast Asia and the problems of low intensity conflict, one of our new initiatives is to use these devices to increase our effectiveness on the more conventional battlefield. You can, of course, visualize how UGS can aid in the surveillance role; but consider the attack of an objective by a tank-heavy team. UGS delivered by indirect fire on the immediate rear of the objective could give indications of the enemy's withdrawal from the objective. This information is valuable in the assault phase. Delivered deep in the enemy rear, on avenues of approach, UGS can give warning of the movements of reinforcements, or of an impending enemy counterattack during the consolidation phase. Additionally, they can be delivered on suspected enemy firing positions to locate the enemy's supporting artillery.

> **"Four conditions must be met if we are to make this armor advantage work"**

These are brief examples of techniques which are currently being written into armor field manuals. In the current revision of FM 17-36, Divisional Armored and Air Cavalry Units, there is a new chapter called "Surveillance Planning," which provides guidance for the use and integration of STANO devices.

Since one result of this increase in target acquisition means will be an increase in information available to the commander, the means by which he makes decisions must be streamlined. This is, in our opinion, another area where Armor must take the initiative. The commander must have technological support since all evidence indicates that the manual command and control system will become saturated with information as our ability to find and fix the enemy improves. As has been indicated, the improvement of this capability is moving by leaps and bounds. But a word of caution is in order—there is no substitute for the commander and his staff, so the use of technology must be tempered. The totaly automated battlefield is not considered an attainable goal in the next few decades. However, IBCS, or the integrated battlefield control system concept is some thing different, and is critical to Armor tactical command and control.

Compact, modular, militarized ADP equipment can be provided to tactical units and operate with the same degree of reliability currently enjoyed with our family of tactical radios. This equipment is currently being tested for TACFIRE, our first ADP-supported requirement. We feel we must go even further and Armor must take the lead in establishing compact modular tactical command and control packages that are as mobile and quick reacting as any weapons system or unit they control.

We must eliminate the necessity of throwing up canvas, manually erecting tall antennas, and establishing elaborate command posts. The Tactical Operations Center (TOC) must be fully linked with the commander at all times: it must be flexible enough to afford full, formal direction and control, and still move with the commander for "off-the-cuff" operations.

Battle area mobility is still yet another initiative, and it takes two forms—the ability to move in the immediate conflict area, and the mobility to move between conflict areas. Our major new initiative in the latter area is in the air—the movement of mobile, direct-fire weapons systems into the third dimension.

For now, let us look at ground mobility. The increased mobility of future Main Battle Tanks will cause a concurrent requirement for an increase in the mobility of our reconnaissance vehicles. In this respect, we have taken the initiative in examining reconnaissance and security missions in Europe.

"There is no substitute for an alert, well-trained observer"

ARSV (Armored Reconnaissance Scout Vehicle) will afford marked improvements in cross-country mobility, firepower to meet the threat, survivability, and target acquisition.

Napoleon said, "Every army must change its tactics every 10 years." We are considering different tactics in the form of light and heavy cavalry units: light units of scout helicopters and small, quiet ground vehicles to perform light reconnaissance and surveillance missions, making maximum use of STANO devices, to include sensors and heavy cavalry units organized and equipped for heavier reconnaissance and economy of force missions using larger ground vehicles and attack helicopters. I would emphasize that these concepts are not approved at this time, and are only ideas which are being investigated along with other possibilities.

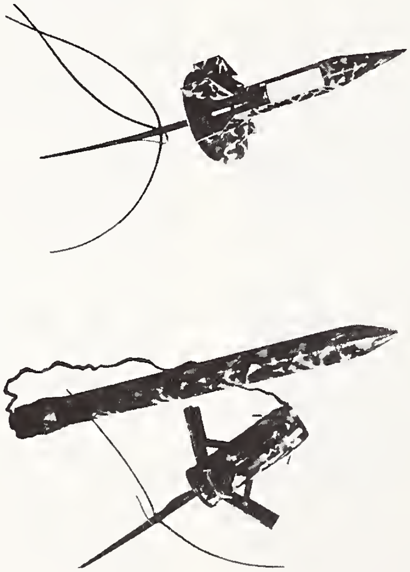
Some interesting vehicles are under test, or will soon be tested, by the Armor and Engineer Board. These will be measured against these concepts. One vehicle is the "Dune Buggy." Another vehicle is the "Twister." A new concept envisions Twister in a tank-killer role using a multiple TOW missile launcher. This concept, especially when teamed with TOW-firing helicopters, offers a practical means to exploit mobility to assume some of the burden of the antitank role from main battle tanks.

Another initiative in this area, called MISTIC, is to stop massed enemy tanks by other means so that our tanks may play a more offensive role. Recent developments indicate that indirectly fired, terminal homing and true fire-and-forget missiles may not be as far off as was previously believed.

Such systems, while offering tremendous advantages, are not without complications. So we must temper our impulse to rush headlong down this path. The ability a scout to guide an indirectly fired missile onto a target at great range, and with little exposure to himself, raises the question of how to integrate this system with our missile firing tanks. It is such questions which we in

continued on page 27

The unattended ground sensors (UGS) shown here are the Aerial-Delivered Seismic Device (ADSID) (top) and the Acoustic and Seismic Intrusion Detector (ACOUSID) (bottom). These sensors will provide invaluable intelligence to mobile armor units seeking to maintain contact with an enemy force.



SCIENCE AT CDC: FROM ABSTRACT TO CONCRETE

by Maj. J. D. Coleman

"I believe that the SA should be a resource person who, while reasonably well informed broadly, is not an 'intellectual in residence' who knows everything about every subject."

Although science is playing an increasing role in the Army today, scientific methodology has special significance to Combat Developments Command (CDC).

The proliferation of technology and the increasing costs of candidate systems makes it imperative that an analytic capability be exercised at the earliest point in the combat cycle—the Concept Phase.

Today, CDC has a strong technical capability, not only in its recently-enhanced Systems Analysis Group (SAG), but in the individual scientific advisors assigned to the various groups and agencies of the command.

It was not always thus. In the early years of CDC, the command was committed to a wide range of studies, yet it had only a limited number of experience analysts to support those study efforts. As a result, the command was dependent upon civilian contractors for technical assistance.

A general dissatisfaction with the results of the contract work—not so much the fault of the contractors, but because the command's initial technical guidance sometimes was flawed—hardened CDC's determination in-house operations research/systems analysis capability.

The goal was to make CDC more nearly self-sufficient technically. The command wanted its own capability to use sophisticated evaluation tools, such as computer simulations of battles. It wanted to get away from the relatively inefficient one-time study contract arrangements. And, finally, the command wanted to create an environment which would stimulate growth in areas of knowledge directly contributing to combat developments.

Which brings us to the subject of the following interviews. To get a comprehensive view of the role of the scientific advisor and, hence, the role of scientific methodology within CDC, *Arrowhead* visited three of the command's most prominent scientists—Mr. David Hardison, Scientific Advisor to Combat Developments

Command (now on a year's sabbatical to the National War College; Dr. Marion Bryson, Technical Director to Systems Analysis Group at Ft. Belvoir, Va.; and Mr. Walter Hollis, Scientific Advisor to the Experimentation Command at Ft. Ord, California.

The Scientific Advisor: An Overview

Arrowhead: You were in the command when the decision was made to increase the in-house analytic capability. What type of persons did you seek to fill these jobs?

Mr. Hardison: In the beginning we wanted our SA's (Scientific Advisors) to be educated in one of the hard sciences or engineering disciplines. We saw that he should have a background of experience to adequately place him typically at about third in rank or seniority at his agency. And we thought he should be a civilian, because this would tend to create longer tenure than the normal two-year officer assignment period, and the civilian status also would avoid some restraints which might otherwise occur.

Arrowhead: Looking about the command today, it seems fairly obvious that early planning guidance has not been altered much. Looking at the present, can you give us some specific thoughts on the role and use of SAs?

Mr. Hardison: First its seems to me that the SAs are provided principally so that they may contribute to the substantive products of the command. We are not much interested in the "window-dressing" aspects or with attempts to balance civilians rank-for-rank with other Army commands, and we are not trying to gain greater acceptability of our products by means other than through intrinsic quality.

The SA normally should be working on the gut issues confronting his agency. He should be attracted to healthy controversy and he should deliberately make personal appraisals on which few of the large number of actions offer the real leverage for improvements.

Mr. David C. Hardison has been with CDC Headquarters since 1964 and has recently been selected to attend the National War College, at Ft. McNair, Washington, D.C. He graduated from Atlantic Christian College where he majored in mathematics. He also has an M.A. degree in mathematics from Duke University.

Arrowhead: In other words, he has to be tough on the priorities and avoid getting bogged down with a mass of detail. Since the SA is in the agency to get some analytic capability injected during the earliest phases of studies, what role should he play here?

Mr. Hardison: The SA must get involved very early and can play a key role to ensure that all parties are, in fact, communicating and aiming for for the same goals. He should review key portions of the periodic reports of the studies. He should look not only at the technological inputs to the study, but, more importantly, to the logic of the whole case as developed in the study. He should examine whether the arguments will hold up when subjected to hostile scrutiny and, on occasion, he should be the devil's advocate if this extreme is required to expose a weakness in an argument or to present forcefully an alternate view.

The SA normally cannot be expected to carry out the total study quality control function at his agency, but if the Commander gets from external sources his first indication that a major piece of work is seriously wanting, the SA has somehow missed an earlier opportunity to be helpful.

Arrowhead: This sounds as if the Scientific Advisor must be a fountainhead of knowledge.

Mr. Hardison: Not at all. I believe that the SA should be a resource person who, while reasonably well informed broadly, is not an "intellectual in residence" who knows everything about every subject. The SA occasionally can be helpful because of personal expertise or knowledge, but the frequency of these occasions—at least in my experience—is disappointingly low. The work of CDC is just to diverse to get much expert coverage

"The SA must get involved very early and can play a key role in assuring that all parties are communicating."

"The SA . . . should be attracted to healthy controversy and should deliberately make personal appraisals."

"Credibility is a very thing, because credibility is a subjective state of mind of the receiver of an assertion."

from any individual. Willingness and ability to grapple honestly with abstract ambiguity is greater to be valued than is a static set of learned, but largely irrelevant, facts.

Arrowhead: Earlier, you mentioned that we should not try to gain greater acceptability of our products by means other than through intrinsic value. This appears to be difficult these days, given an apparent credibility gulf between the professional military and the civilian. Could you explain?

Mr. Hardison: Credibility is a very funny thing, because credibility is a subjective state of mind of the receiver of an assertion. I know I feel far more comfortable in discussing whether we deserve credibility than whether we receive it. I think as our studies get better and better, and as our experiments become more objective and more relevant, we just inherently earn a higher credibility.

Arrowhead: This probably will happen almost automatically within the Army official family; but what about the general public? Does the CDC scientific community have a responsibility to help translate these scientific truths into layman's language and communicate them outside the lodge?

Mr. Hardison: I think so, in part. One thing I've observed over the years is that it seems to take a period of time for a new set of ideas to diffuse themselves out across the population so that there is a wide enough understanding of what's being said to accept it. It's not uncommon that we at CDC go through three experiments on a given subject area to achieve this.

A typical pattern is that the first experiment is of a very exploratory nature with inadequate instrumentation and certain experimental design faults and very proxy equipment. But even in these experiments, most frequently as you look carefully at the results, they start telling you something about the pattern of behavior of the thing. But, particularly when this pattern is different from what tradition or conventional wisdom would hold to be the case, there is great hesitancy on the part of people to accept it.

But then this idea won't go away, so typically there is a requirement to re-test this same issue, but with better instrumentation, better equipment, a better plan. The interesting thing is that the results frequently tend to corroborate, except with greater credibility in the data. And this then starts building into the general understanding of not only what is true, but why it is true.

And then the third stage of the game typically is that some years later a third experiment is run and it sort of nails the lid on the coffin. The reaction to that is all too frequently: "Why did anyone ever doubt it?" We find the reaction going full circle, from "How could this be?" to "Why do we find it necessary to prove it at all?"

Arrowhead: Could you give us some specific examples of this full circle syndrome?

Mr. Hardison: For example, in the late 1950s we tested the 5.56mm rifle at CDCEC and the tests showed then that the 5.56mm rifle was clearly superior to the 7.62mm. But this was not well accepted.

Then back in 1965 and '66 in the SAWS (Small Arms Weapons Studies) Experiments, we had what is now the M-16, and that was the second cycle. The third cycle came in the latter parts of the tests of the IRUS (Infantry Rifle Unit Study), where the IRUS results were really quite similar to the ones they had gotten way back almost ten years earlier. But no one ever questioned at the end of the IRUS results the performance of the lightweight, high cycle rate, high velocity, small mass rifle. We had come all the way from very dubious to no longer questionable.

The same thing is largely due in the tests of the vulnerability of helicopters to ground fire weapons. We have several tests, ranging back to late 1950s, all the way through our current BAHT (basic attack helicopter team) experiments. And, again, the pattern seems to be repeating itself.

Arrowhead: One final question. You have espoused a set of attitudes you feel every scientific advisor should possess. Would you go over them again? Others besides scientists might find them quite helpful.

Mr. Hardison: A little earlier, I mentioned the fact that the SA will be able to bring very little in the way of unique factual knowledge to most problems he will face. I may have overplayed this, but still it does seem likely that more helpful than his few facts will be this set of attitudes:

—An enthusiasm for gaining empirical observation to build a new theory;

—A willingness to test old theories (even ones enshrined as doctrine);

—A certain daring for advancing hypothesis regarding how things "really" are related;

—An eagerness to try a new approach and improve on the old way of the earlier generations;

—A skepticism of another's claim of true understanding;

—A reluctance to move from hypothesis to conclusion;

—An ability to be obsessed more by an idea than by a thing.

Arrowhead: Thank you, Mr. Hardison.

SAG: The In-House Contractor

Arrowhead: Probably the first thing that needs to be accomplished is to straighten out any misconception that may exist concerning your job. Is the term Technical Director just another way of saying Scientific Advisor?

Dr. Bryson: No, The SA Group has no Scientific Advisor. My title is Technical Director and, as such I have a significantly different set of duties than I would have were I a Scientific Advisor. The major difference is that I am in the chain of command and the approximately 100 technical people in the group report to me either directly or through their supervisor and then through me to the Commanding Officer.

I am responsible for the technical program in SA Group and have final approval authority for all technical products of the Group. The science advisors in other CDC groups have no command responsibility. Their role is to advise their commander, who is the decision maker for the group.

Arrowhead: Since it is patently clear that SA Group is a different breed of cat, perhaps it might be well for you to spell out its mission and some of its more significant functions?

Dr. Bryson: The Systems Analysis Group functions

"OR/SA can never replace military judgement, but the proper balance between these two necessary ingredients serves to assure the most favorable outcome."

essentially as an "inhouse contractor" would. We receive directives from headquarters to provide systems analysis and operations research support for our customers who are in the various groups, institutes, and agencies in CDC. We respond by producing a product working in close coordination with the customer. More specifically, some of our functions are to:

—Provide an interdisciplinary capability to evaluate the effectiveness of present and future Army systems with due regard to cost benefits;

—Develop and maintain a capability to support CDC with scientific advice on planning, design, conduct, and analysis of field experiments and tests;

—Sponsor the development, maintenance, and application of a group of integrated models for use in CDC studies;

—Provide consulting service to all elements of CDC during the preparation of study plans to insure adequate application of operations research, systems/cost analyses, and related scientific support;

—Perform responsibilities under the provisions of AR 11–18, Cost Analysis Program, as directed.

Arrowhead: What are some of the more significant projects on which SA Group is currently working?

Dr. Bryson: An exhaustive list would fill more space than you have, but I think these that I am listing are probably representative of the work we do:

—Heavy Lift Helicopter

—Army Small Arms Requirements Study—Phase II (ASASRSII)

Dr. Marion R. Bryson is the Technical Director of the CDC's Systems Analysis Group (SAG), at Ft. Belvoir, Va., where he has served in this capacity since 1968. He graduated from the University of Missouri with BS and MA degrees in Mathematics and received a PhD. in Statistics from Iowa State University.

—STANO—Systems Assessment Model

—Conceptual Design of the Army in the Field (CONAF)-Cost analysis

—Cost Effectiveness Study-TOS (CEATOS)

—Family of Scatterable Mines

—Attack Helicopter Field Experiment 43–6

Arrowhead: That's a pretty impressive list and it indicates the role that Operations Research/Systems Analysis (OR/SA) plays in this command. The increasing visibility being given SA Group indicates that the future of OR/SA in CDC is assured.

Dr. Bryson: Quite clearly operations research and systems analysis are necessary aids in the conduct of most developmental studies. There is no doubt that in the future, with the reduced funds provided for the defense of the nation, we will be even more dependent on scientific techniques to assure that those systems we do spend scarce dollars on are those which will produce the most effective national defense for the money spent.

OR/SA can never replace military judgement, but the proper balance between these two necessary ingredients in the decision process serves to assure the most favorable outcome within the constraints. In short, OR/SA has a great future in CDC in particular, and in military decision making in general.

Arrowhead: Thank you, Dr. Bryson.

CDCEC: Theory And Practice Combined

Arrowhead: Most scientific advisors in CDC appear to be OR/SA (Operations Research/Systems Analysis) oriented. Do you see your roll here at CDCEC as enlarged beyond the scope of a pure analytic approach?

"One of the things that you must be very careful with in writing the results of your experiments is to present a very clear, audit trail from the basic data through the analysis to the conclusion."

Mr. Hollis: I see the work of the scientific advisor here as being a combination of the so-called analytic approach to problem solving coupled with practical aspects of actually pulling off a solution in the field. The typical OR/SA man can sit back and build a model of his problem, and be in control of the process at his desk. Here we do that, but also have to be practical and devise a way to implement our solutions in the field, where we cannot be in total control of the process. I suspect that I have a better feel for the hardware side of the problem then some of my colleagues elsewhere in the command.

Arrowhead: Within the practical aspects of your job . . . the doing portion in the field . . . are there any peculiarities?

Mr. Hollis: I'm not sure it's a peculiarity, but it is a definite requirement . . . and this is the ability to be flexible enough in your basic experimentation design to modify in the field as you proceed. One of the big things that we learn very quickly is that there is nothing more permanent than change, and as you proceed to gather data you must be in a position to modify your approach if the data you are getting is not making sense.

Another thing that I find in this job is the necessity for me to remind people from time to time that the work they do in the field has to be operationally relevant and not just statistically elegant. We must be prepared to accept some "fuzziness" in the numbers, in order to have operational relevance in our experiments.

Arrowhead: When one thinks of laboratory experimentation, the one word that comes across is control. HLMR (Hunter-Liggett Military Reservation) is called a laboratory. How can you insure that you exercise the required degree of control to insure validity and reliability?

Mr. Walter W. Hollis has served as Scientific Advisor to the CDCEC at Ft. Ord, Calif., since July 1968. He graduated from Northeastern University with a Bachelor of Science Degree and has taken graduate courses in Physics from Boston University.

Mr. Hollis: Well, the first step in that is to really sort out the variables that are important to the problem and see if you can control those while, at the same time, letting the problem on the ground remain flexible and keyed to the tactical situation. A very important step is at the project analysis stage, where we identify the key elements that really drive the problem and we try to design to control those variables in such a way that we can see how change in these variables effect the resulting data. It is sometimes necessary to do several small but highly controlled experiments to gain fundamental knowledge about some particular aspect of a military system which you suspect to be important to system success. Following this type experiment there should be an experiment to test the theory. This experiment should be done in a much more operational context, utilizing measures of effectiveness which can be formed from data elements, which can be acquired in the less controlled environment. Such measures may be secondary measures such as "exchange ratios" which are influenced by the variables you examined in the more controlled experiments.

Arrowhead: Can you give us an example of this?

Mr. Hollis: In the TOW/106RR experiment, there was a desire to get at the performance effect created by smoke, dust, and battle field obscuration. As you can imagine, if you tried to control that set of variables, you could get in a lot of arguments like, "How do you know that's the right level of smoke?" or "How do you know that's the right amount of dust?" So what we tried to do there was fire into the experimentation area a typical infantry mortar support barrage and let the target engagements take place in that context. The result was a tactically acceptable level of battle field obscuration about which no one could argue . . . Those were live rounds, and they blew up, and they fell where they would have fallen had that been fired in a real battle.

So this was a case where we had control of the firers' location and the target type and location, but at the same time were introducing the relevancy of battle field noise and smoke in an operationally acceptable fashion.

Arrowhead: Do you find any skepticism among your scientific colleagues that the results of CDCEC tests are, in fact, valid, objective, relevant and reliable?

Mr. Hollis: There are always skeptics, and one of the things that you must be very careful with in writing the results of your experiments is to present a very clear, audit trail from the basic data through the analysis to the conclusion. There must be no question about the fundamental data from which the conclusion stems.

"I have to remind people from time to time that the work they do in the field has to be operationally relevant and not just statistically elegant."

One of the things that I have pushed hard for is publication of what I call an Observed Data Report. This is a report which tells "what happened" when we went to the field. Such a report does not give, necessarily, any analysis, but it does provide the data in a form which analysts may use for their own analysis purposes. Our final reports, of course contain the results of our analysis of the data.

Where you begin to get skepticism is when attempts are made to extrapolate the results to larger elements or different situations then those addressed in the field.

Arrowhead: It is becoming clear that there are three phases of CDCEC's work load in which you are very active: The planning or structuring of the experimental design; the conduct of the actual experiment; and, finally, analysis and report on the experiment. Is this a fair statement of the situation?

Mr. Hollis: Yes, and I'd like to emphasize the last point. It is very important that I make sure that the statistical analysis of the experimental data is not misinterpreted by those who write the narrative summaries and conclusions in our reports. For example, it is one thing to say that one tested the null hypothesis and failed to reject it and quite another to state that because one failed to reject the null hypothesis, it was a true hypothesis. That's wrong, and it's that kind of thing that clutters up the findings and leads to skepticism.

One of the real tasks of all scientific advisors is to avoid becoming advocates. We have a large number of people in

continued on page 28

For God and Country

The first century had been a most difficult period for the Hebrew Christians. Persecution had placed a tremendous strain upon their newly formed loyalty to Christ. Some had deserted, and others were losing their enthusiasm. Something important had to be done and done quickly. The writer of the book of Hebrews recognized this, and he did it. He reminded those discouraged people of the importance of faith. He recalled a catalogue of the great notables of their national history and pointed out convincingly that they were great, not because of their possessions or material security, but because of their faith.

The writer of old had something. He had caught the gleam of a great truth. It was true for that period. It has been true ever since. The big things of life have always been accomplished on the basis of faith. The story of faith is one of magnificent recklessness on the part of real men—men who burned their boats on the beaches and ventured into the unknown.

Today we need to remind ourselves of this great truth. Discouraging things have happened, and perhaps more discouraging things are ahead. It is easy to take the role of the cynic. We must maintain our balance by the stabilizing force of an unshakable faith—faith in our country, faith in our God.

PRAYER

Strong Son of God, immortal Love,
Whome we, that have not seen Thy face,
By faith, and faith alone, embrace,
Believing where we cannot prove.
Thou wilt not leave us in the dust:
Thou madest man, he knows not why;
He thinks he was not made to die;
And Thou hast made him: Thou are just. Amen.

G. ROY BRAGG, Tremont Methodist Church, New York City

LOHAR

continued

better than the Huey. The loading times for the TOW were faster with the Huey because the TOW is easier to get to in the Huey. The LOH, though, is smaller and quieter—and this helps with deception and surprise."

Cpt. Kauffman notes that during the pre-test training given to the LOHAR squads the more drilling the squads went through, the more efficient and capable they were. "This indicates to us that an intensified training program should be enacted to find out the amount of training that is required for a LOHAR outfit," he says.

Nevertheless, the LOHAR concept itself, according to all observers, showed great potential during the tests. After the initial day of testing with the LOH-DRAGON crews over 10 different landing zones, the ratio of "kills" ran about 6 to 1 in favor of the DRAGON squads. "We're also recommending that tests be run to come up with mixes of TOW and DRAGON both—especially LOH-mounted aerial TOWs with ground-deployed DRAGONS," adds Cpt. Kauffman.

The final report on the tests was sent to the 82d Airborne Division and CDC Headquarters for review last month. "One of the conclusions in the report," says Cpt. Kauffman, "is that the LOHAR concept does enhance the armor defeating power of the infantry battalion."

Freedom . . . Privilege Or Obligation?

Lieutenant Colonel Monroe L. Manning has won for the third time the George Washington honor Medal of the Freedoms Foundation's Letter Awards Program. The author currently is assigned to the Combat Developments Command's Maintenance Agency, at Aberdeen Proving Grounds, Md. Arrowhead feels the significance of the colonel's latest award-winning entry should be shared with our readers.

The story is often told of the serviceman in Vietnam who stated that, "For those who have fought for it and died for it, freedom has a taste the protected will never know." It has been a marine in Khe Sanh, a young sergeant at Hamburger Hill, and a seaman with Task Force Clearwater. But no matter who said them, those simple words for many best answers the question: What is Freedom—Privilege or Obligation?

British philosopher John Mill wrote, "War is an ugly thing, but not the ugliest of things; the decayed and degraded state of moral and patriotic feeling which thinks that nothing is worth war is much worse. A man who has nothing for which he is willing to fight; nothing he cares more about than his own personal safety; is a miserable creature who has no chance of being free, unless made and kept so by the exertions of better men than himself."

There are some in our country today who do not understand this precept, or, understanding it, choose to ignore it.

The basic credo of democracy contained in our Declaration of Independence and widely believed, if not practiced, in our society suggests that each citizen has specified rights that cannot be denied him. These rights were spelled out, in part, in the first ten amendments to our Constitution, which outlined such rights and freedoms as those of religion, speech, press and assemblage, as well as the rights to present grievances, bear arms and be secure against unreasonable searches and seizures. These rights have been expanded in the popular mind and by legislative enactment to include many other guarantees by which the state accords its citizens rights to vote, to hold office and to form associations, and many other protections.

These blessings of freedom exist only for those in this world who cherish them and are always prepared to guard and defend them. This freedom is a privilege that incurs obligations, especially strong obligations for the men in uniform.

Often bombarded by anti-military dialogue and presented daily examples of evasion of obligations, the young American in uniform must remain the strength of this Nation, and with that strength there is a perpetual obligation.

As Lincoln advocated many years ago, men in the Armed Forces have been required to take an oath to support and defend the Constitution of the United States against all enemies, foreign and domestic—with the help of God. This oath is unique—its charge is not for defense of any man, nor any partisan cause—this oath is a solemn affirmation to defend the foundation and expression of the highest ideals of freedom for man—The Constitution of the United States.

This is an obligation and I love it. The song entitled, "This is My Country" has a special meaning for me and each time I hear it, I cry a little and determine to work a bit harder for my Country.

Science continued

the army today that are terribly excited about the attack helicopters and probably very correctly believe that they are the answer to a large part of our anti-tank problem. However, we, as scientists, have the job of designing and executing an experiment which is credible on both sides.

Arrowhead: CDCEC has come a long ways and there have been many high water marks . . . the early works in aircraft survivability, the SAWS (Small Arms Weapons Systems) experiments, the weapons systems shoot-off and, most recently, the BAHT (Basic Attack Helicopter Team) experiment. Looking at the future, what do you think poses the biggest challenge for CDCEC?

Mr. Hollis: I think the biggest challenge facing us today is one we have in common with the rest of CDC; that is, figuring out how to assess the value of automated command and control systems. We are right on the threshold of learning how to conduct some field experimentation with command and control systems, trying to eventually determine the contribution of systems like IBCS—to combat effectiveness. If the integrated battle field control system is a good thing, we're going to have to prove it some day, and probably some of the answers will be given here at CDCEC.

Arrowhead: Thank you, Mr. Hollis.

Armor continued

Armor must answer as we proceed with these new initiatives.

You may say, "These ideas and new weapons systems are interesting now, but it takes too long to field them. What are you doing to shorten the developmental cycle?"

As many of you know, time drags on as we complete a cycle of tests to ensure that what we commit ourselves to buy is effective. Mistakes are costly, and money is a major constraint; but delays cost money too. A major new initiative in compressing the test cycle is the proposed OST, or Operational Service Test, with a series of field evaluations or user tests. Unit personnel, not factory representatives or test personnel, operate the equipment in a semi-tactical environment to assess materiel, training, doctrine and support implications of the new equipment.

The innovative OST will be jointly evaluated by the Combat Developments Command, the Army Materiel Command and the Continental Army Command. These commands are locally represented by the Armor Agency, the Armor and Engineer Board and the Armor School.

The entire test will last one year and include 6000 test miles. There will be several field exercises with an XM803 platoon and an M60A1 tank platoon for comparison. The results of the OST will give Department of the Army invaluable information upon which to base full production and development decisions.

The Armor agency does not claim to have a corner on imagination or ideas and we have not presented our solutions. We have presented our initiatives: Armor's initiatives, to seize new ideas and develop them into increased combat effectiveness.

In closing, we the members of the Armor Agency would like to present a challenge to the Association and each of its members. We have raised some of the many questions and problem areas which are under investigation at this time. Your comments, suggestions, or ideas will be most welcome at the Armor Agency.

We challenge you to join us in pooling our resources in order to ensure that Armor makes the best possible decisions so that our maximum potential is reached. This is necessary if we are to be able to meet and defeat the Communist threat should that ever become necessary. There will be no second chance. With such high stakes, it is imperative that we leave no stone unturned in an effort to gain and maintain a supremacy on the battlefield which will either deter or defeat the Communist threat.

Spot Reports

Company Honored

FT. ORD, Calif . . . "The personnel in this company have a high degree of intelligence and realize that going AWOL only creates problems, not solves them," said the executive officer, First Lieutenant Peter M. Biggs.

Lt. Biggs was commenting on the fact that Combat Developments Command Experimentation Command's (CDCEC) 567-man Headquarters Company had just completed a full year without a single AWOL.

"The men of Headquarters Company are not unduly tasked and there is no undue harrassment—most of them work in an atmosphere similar to that of a civilian occupation," continued the executive officer.

The Company's mission is to provide the personnel necessary to fulfill the logistical support of CDCEC's command staff sections. Mathematical-statistics analysts, engineers, photographers, plumbers, carpenters, draftsmen, TV equipment repairmen, electronic equipment repairmen, clerks and typists are just a few of the various jobs held by the 359 enlisted men, 192 officers and 16 WACs assigned to the company.

The In-Processing of all personnel assigned to CDCEC is also a responsibility of the Company. The In-Processing Section has a short three days to process a man into the command but it functions well. "Our first task is to determine if there are any immediate problems and then solve them," stated Sergeant First Class Mauro Gonzalez, NCOIC of the section.

Records are carefully screened to see where the individual can best be used within the command. He is also given a CDCEC orientation and his clothing issue is brought up to date before he is assigned to a specific unit.

Although not a VOLAR company, many of the program's concepts have been initiated in CDCEC Headquarters Company—some even before the program began. No unnecessary formations and an Open Door policy has been in existence for over a year. Beer in the barracks and mess hall and three-man cubicle living areas are some of the more recent changes.

The trophy cases overflow with awards won by the company in sports (which includes the Commanding General's trophy) and are displayed in the Orderly Room—its walls covered with reenlistment and savings bonds awards.

Lt. Biggs added, "We are responsible for troop morale and welfare. Solve a man's problem, keep him happy and his efficiency will be high—and he won't go AWOL."

Fence for De "Fence"

FT. BELVOIR, Va. . . . Why would a soldier take rolls of chain-link fence into a battle zone? He might be planning to "fence" in all the ground he takes from the enemy or, perhaps, raise some animals.

But if it's Captain Watson G. Caudill, a recent graduate of Armor Officers Advanced Course at Ft. Knox, Ky., that fence just might be his lifesaver.

Capt. Caudill uses the fence as a "standoff," which is a wire barrier to protect a tank by deflecting fin stabilized rounds and causing early detonation. Capt. Caudill thought it took much time to erect the "standoff" so he designed a new method using old air mattresses. The wire is wrapped around deflated air mattresses and hung around the tank in rolls. When the mattresses are inflated, they unroll and set up the wire standoff fence. The method takes only a matter of seconds and the individual soldier is protected because it can be done from inside the tank.

For his creative thinking, Capt. Caudill has been given the Combat Developments Command (CDC) Creative Thinking Award.

Scholarship Award

FT. LEAVENWORTH, Kan. . . . A $1,500 scholarship from the

Society of the First Division was presented recently to Kimberly Treas, 9, of Kansas City, Kan., by Brigadier General Albert G. Hume, Commanding General of Combat Developments Command Combat Systems Group.

Kimberly's father, Captain Richard Treas, died August 22, 1968, in Vietnam when he was struck by sniper fire.

BrigGen. Hume was the Chief of Staff of the 1st Infantry Division in Vietnam from August 1969 to April 1970.

The Society of the First Division awards scholarships to the sons and daughters of 1st Division men killed in Vietnam. Kimberly's brother, Richard, has also received a scholarship from the society.

Light "Fingers"

FT. BELVOIR, Va. . . . How does a soldier on deep reconnaissance pinpoint a target for airstrike without giving away his position?

Answer—he "fingers" it with a laser beam. Not only that, but when the plane launches its missile, it locks-on and rides-the-beam unerringly right into the target.

The unique device, the Laser Target Designator, was used in the Combat Developments Command (CDC) program called SIAF—Small Independent Action Forces. The SIAF experiment, conducted by CDC's Experimentation Command at Ft. Ord, Calif., put Army Green Beret plus Marine and Navy reconnaissance forces into intensive combat situations where they employed the 26-by-5 inch boxlike device.

It is mounted on a rifle-butt that is actually a replaceable battery case providing some 30 minutes of operation. For aiming, a rifle telescope is enclosed in the molded plastic case which also contains a eye safety filter in case the user fires it at highly reflective surfaces.

The Designator, being used by CDC was developed through Advanced Research Projects Agency, Department of Defense. It can be used at night in conjunction with the Starlight Scope and can also become a homing beacon by clipping on a diffuser lens.

The CDC experiment, headed by Colonel Worthington Mahone of Experimentation Command's Project Team III, evaluated personnel-equipment mixes and combat techniques.

New CSM at PALS

FT. LEE, Va. . . . Command Sergeant Major Leroy Baldwin recently reported for duty as Command Sergeant Major, Combat Developments Command Personnel and Logistics Systems (PALS) Group, replacing CSM Joseph T. Offord who was reassigned to Thailand.

CSM Baldwin came over from the 260th Quartermaster Battalion also located here.

CSM Baldwin entered the US Army in April 1942 and served during World War II in Europe as a Field Artilleryman until he left the service in 1945.

In April 1948, CSM Baldwin joined the service again and has served continuously for 23 years. He attained his present rank of CSM in June 1964.

Asked about his new assignment, he said, "It's a new experience for me since I have always been assigned to troop units, but I am looking forward to the challenge at PALS."

Thinker Honored

FT. BENNING, Ga. . . . Captain Peter J. McGregor, a student of Infantry Officer's Advanced Course 6-71, was presented a Certificate of Achievement, a $100 honorarium, and a statuette of Rodin's Thinker for his contribution to the US Army Combat Developments Command's Creative Thinking Award Program.

The award was presented to Capt. McGregor by Major General Orwin C. Talbott, Commanding General, US Army Infantry Center, Ft. Benning, Ga.

Captain McGregor's recommendation for "The Strategic and Tactical Delivery System for Operational Rotary Winged Aircraft" (STADSOR) would provide the ground commander with rotary winged assets in the objective area during the initial employment of STRAC (Strategic Army Corps) forces in world contingency missions. STADSOR is a system by which a flying, fully operational helicopter could be released from a cargo aircraft or "mother ship." The "mother ship" could proceed to the objective area within performance ranges of speed, distance, and altitude; and, the helicopter could be launched and operated thereafter within its operational ranges.

Implementation of a Strategic and Tactical Delivery System for Operational Rotary Winged Aircraft would provide the delivery of operational rotary winged aircraft during the initial assault phase of an airborne operation where their firepower and mobility could be effectively used.

The continuing Creative Thinking Award Program, established by CDC headquarters, Ft. Belvoir, Va. to encourage meaningful contributions to combat developments efforts from Army officer-students in Advanced courses at branch and service schools, is one of CDC's primary sources of new ideas. The idea itself, does not have to be new: new uses for old ideas is what the CDC Creative Thinking Program is often all about.

The CDC Creative Thinking Award Program at Ft. Benning is administered by the command's Infantry Agency.

First and Only

FT. SAM HOUSTON, Tex. . . . The Army War College graduation date of 23 July 1971 was a memorable one for Colonel K. Kirk, Staff Veterinarian at the United States Army Combat Developments Command Medical Service Agency here.

Colonel Kirk, the only veterinarian in CDC, after an intensive two year correspondence course, became the first Veterinary Corps officer to graduate from the College.

The central theme for the course was the development of a United States National Strategy and a Supporting Military Program. After completing the course, Col. Kirk had nothing but praise for the manner in which the material was presented by the War College faculty.

As Staff Veterinarian at the Medical Service Agency and the only veterinarian in CDC, Col. Kirk provides the veterinary expertise to form the requisite multi-disciplinary team participation so vital to the total Medical Service Agency mission.

Civilian Honored

ABERDEEN PROVING GROUND, Md. . . . A $1,000 special achievement award in recognition of work simplification has been presented to Joseph E. Steedman, an operations research analyst with the Combat Developments Command Maintenance Agency (CDCMA) here.

Mr. Steedman, an employee with the CDCMA operations research office developed a method for computerized research of line item density in the Army's Tables of Organization and Equipment which has since been utilized throughout the entire Combat Developments Command. As a result of his suggested idea CDCMA has saved 47 man-years in the past year alone. Also, it is anticipated that savings for 1971 will exceed last year's by a considerable amount.

The computerized research method releases professional manpower, which otherwise would be involved in very time-consuming research actions, and at the same time has greatly improved the accuracy of the searching task.

New Sergeant Major

ABERDEEN PROVING GROUND, Md. . . . A former U.S. Navy Gunners Mate Third Class has been promoted to the rank of Sergeant Major at the Combat Developments Command Maintenance Agency (CDCMA) here.

Sergeant Major Bryon L. Stephenson was advanced to his present grade in ceremonies held in the office of Colonel Donald H. Greeley, commanding officer.

SGM Stephenson entered the U.S Navy in April 1944 and served during World War II in the South Pacific as a Gunners Mate Third Class until June 1946 when he left the service. Returning to his native state of North Carolina, he enlisted in the U.S. Army in March 1947 as a corporal with the 82d Airborne Division, Ft. Bragg, N.C., where he remained until March 1950.

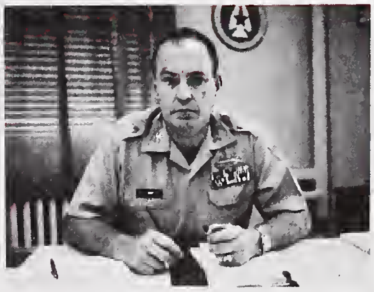
Highlights of his military career have included assignments with the 5th Ordnance Company in Korea as a platoon sergeant from September 1951 until August 1952. From June 1953–54 SGM Stephenson served as an ordnance maintenance advisor with the Joint United States Advisory Group, Joint American Military Mission Aid to Turkey.

He served with the 8th Ordnance Company in Germany from June 1956 to May 1959 as a platoon sergeant and shop control supervisor. From October 1960–63 SGM Stephenson was assigned to Ft. Ord, Calif., as supply NCO and maintenance NCO with the Combat Development Experimentation Center.

In Korea, from November 1964–65, SGM Stephenson served as a small arms repair advisor with the Korean Military Advisory Group. Returning to the United States in December 1965 he was assigned as a senior instructor with the U.S. Army Ordnance Center and School here at Aberdeen Proving Ground until March 1969 when he was transferred to the Republic of Vietnam. While in Vietnam SGM Stephenson served as supply NCO in the S-4 Section, 3d Brigade, 9th Infantry Division. He returned to APG in April 1970 and was assigned to the Combat Developments Command Maintenance Agency here as the agency's acting sergeant major.

SGM Stephenson wears the Bronze Star Medal with one Oak Leaf Cluster and the Army Commendation Medal with two Oak Leaf Clusters.

Engineer Agency CO



FT. BELVOIR, Va. . . . Colonel Russell J. Lamp is the current commander of the U.S. Army Combat Developments Command Engineer Agency. Prior to this assignment he was Chief of Program Management, MASSTER, at Ft. Hood, Tex.

After graduating from the U.S. Military Academy in 1949, Col Lamp has seen varied duty assignments including Department of Defense Staff, Office of the Chief of Engineers, Commander of the Mobility Equipment Research and Development Center at Ft. Belvoir, Va.

He has earned a Master's degree in Civil Engineering at Massachusetts Institute of technology and a Master's in International Affairs from George Washington University, as well as graduating from the Command and General Staff College, Armed Forces Staff College and the Army War College.

Included in his awards are the Combat Infantry Badge, Legion of Merit, Bronze Star Medal and Army Commendation Medal.

Teal Conference

FT. BELVOIR, Va. . . . St. Hubert, Canada, was the setting for the fifteenth annual TEAL (Tactics, Equipment and Logistics) Conference in June. Situated near Montreal, Quebec, St. Hubert is the home of the Canadian Armed Forces Mobile Command, which hosted this year's event.

The meetings are held at the Vice Chief of Staff level to give guidance to the Armies of the U.S., United Kingdom, Canada, and Australia (often referred to as ABCA) on special problems concerning international standardization of equipment and procedures. Lieutenant General John Norton, CDC's Commanding General, was the senior US representative this year.

Suggested topics to be discussed at TEAL are submitted and a final agenda is agreed upon by all Armies. The agenda items vary greatly from year to year and cover a wide variety of subjects. For example, this year, in addition to the usual report by the Washington Standardization Officers (WSO), Canada and the United Kingdom gave presentations on Internal Security Operations; Australia and Canada made presentations on Military Assistance to Underdeveloped Nations—Doctrine and Methods; and Australia made a presentation on Interoperability of Future Communications Systems.

The U.S. gave a briefing on the U.S. concept of combining airmobile, air cavalry and armored units into one organization and an update of the STANO briefing given at TEAL XIV. In response to a UK presentation on UK Equipment Objectives to Meet Operational Requirements of the 1981–90 period, the U.S. made a similar presentation on U.S. equipment objectives and presented briefings on the U.S. interdependent Research and Development and Materiel Need (MN) Concepts.

TEAL XV was of particular significance in that it initiated a program by which the four Armies are to take initial actions to capitalize on the equipment development efforts in one another's country. The view here is not to duplicate efforts and dollar expenditures by parallel research and development programs, but, early in the game, to reach agreement on common equipment requirements and allow one Army to "sponsor" the development to meet the agreed requirement.

Since this is something of a unilateral approach, it should preclude some of the problems of joint management and funding that cropped up in the past. Under this concept, the non-developing countries are under no obligation to buy until they have tested and accepted an item.

Combat Developments Command's participation in the TEAL discussions started with CDC's activation in June 1962. CDC furnishes a General Officer delegate and a representative, the Chief of International Division, to the discussions.

TEAL discussions are vital to the mission of the US Army in that there is no other forum in which high-ranking members of the ABCA Armies can meet and fully exchange thoughts in developments and problem areas. The U.S. has much to gain by the utilization of other Armies' expertise in various fields and in possible cooperative research and development.

Policing Up Pays

FT. ORD, Calif. . . . The Communications Platoon, Field Support Company, Support Battalion of the Army Combat Developments Command Experimental Command has initiated a happy way to perform the common chore of policing.

The platoon, headed by Lieutenant Rodney C. Brewer, have combined profit and ecology in policing training areas within Hunter-Liggett Military Reservation. Being hot in sunny California, cold drinks are popular and invariably come in small metal containers. The platoon gathers up these cans, that are inadvertantly left in the area, and return them to a central deposit in their company area. When the container is full, the cans are taken to a recycling plant in Salinas where the troops receive 10 cents per pound. The dimes add up and are eventually to be used for a unit party.

With this method of policing, the platoon is accomplishing three goals: (1) keeping their areas clean (2) earning money for a party and (3) aiding ecology by reusing the cans and helping make our earth a cleaner place on which to live.

Major General Chapman Takes Over as DCG

FT. BELVOIR, Va. . . . Major General Curtis W. Chapman, Jr., officially took over the position of Deputy Commanding General of Combat Developments Command (CDC) on 20 September.

MajGen. Chapman replaces Major General Leo H. Schweiter who now is assigned to Vietnam.

MajGen. Chapman has served more than 25 years with the Almy since his commission from the U.S. Military Academy in 1941. The general comes to CDC from his previous assignment as Director of Military Engineering, Office, Chief of Engineers, U.S. Army, Washington, D.C., where he has served since September 1970.

The general has attained several degrees which include a BS in Military Science from West Point, a BS in Business Administration from the University of Hartford, and a Master's in Civil Engineering from the California Institute of Technology. MajGen. Chapman's attendence at the Command and General Staff School and the Industrial College of the Armed Forces round out his educational background.

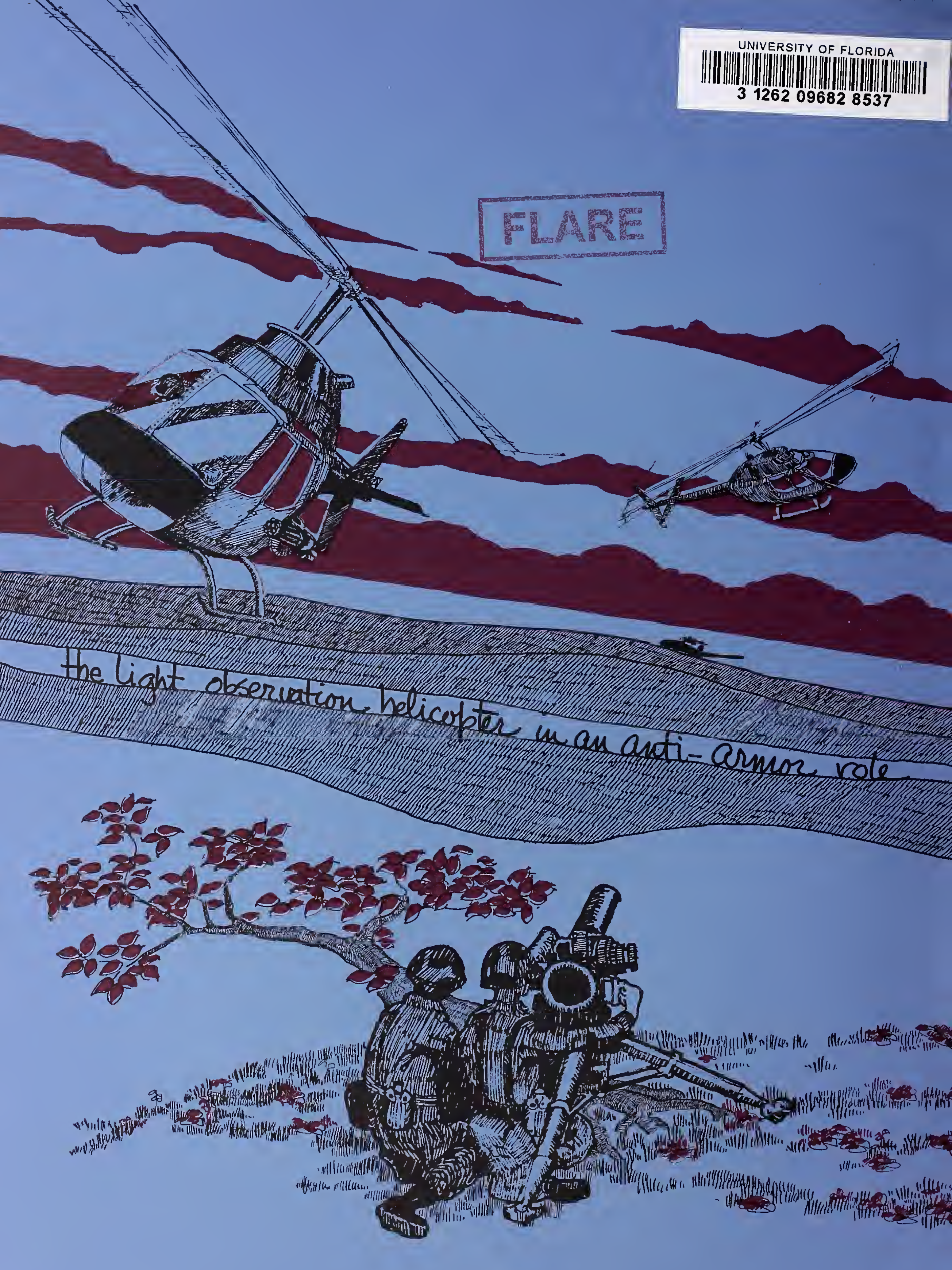
Among the personal decorations he holds are the Distinguished Service Medal, Silver Star, Legion of Merit with Oak Leaf Cluster, Bronze Star Medal, Air Medal with 2 Oak Leaf Clusters, Joint Service Commendation Medal, and the Army Commendation Medal with Oak Leaf Cluster.

Commanding General **LtGen. John Norton**
Information Officer **Maj. J. D. Coleman**
Managing Editor **Lt. Lang D. Soo-Hoo**
Production Editor **Sp5 Rick McQuiston**
Staff Writers **Mr. R. W. Herman**
MSgt. Raymond Davis
Lt. Bob Gregory
Sp5 Bill Witcraft

Contributing Illustrator **Lt. David Arnold**

UNIVERSITY OF FLORIDA
3 1262 09682 8537

FLARE


the light observation helicopter in an anti-armor role